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sleeping bulb will waken and reach up into the moist spring air a single glossy leaf, spotted or blotched all over with spaces of darker shade, which he will then recognize, or any child could tell him, is the sterile condition of his misnamed though favorite Dog Tooth Violet (*Erythronium Americanum*).

Soon after the leaf has fully developed, spreading forth its rich juices to the influence of sun and air, three or four stolons or runners, such as already described, will protrude at the lower extremity of the bulb, and, promptly turning upwards, will be seen bursting through the surface of the ground, reaching up an inch or two into the air and then in a wavering, uncertain way burying themselves again in the earth to plant the bulb that shall repeat the same process next year.

As is well known, in its single leaf condition this plant never blooms. In this *second* year of its existence, therefore, the bulb cannot have fulfilled its whole mission; if, and we admit it to be an assumption not proven, the law of nature would give to every individual at least the *chance* to reproduce itself by means of perfected seed. By the *third* year, then, we presume the bulb will have attained the strength necessary to enable it to send up two leaves and a flower stalk and become what it should have been called, a lily indeed, with its pendulous golden bell.

In the lily family, propagation by means of lateral or axillary bulbs (as a compensation, perhaps, for the frequent failure to perfect their seeds) is familiar to every one; but I cannot find that these partially aerial runners of the *Erythronium*, by which it projects its bulbs sometimes to the distance of a foot from the parent plant, have been previously noticed. It may be well to add that these observations refer especially to one locality in what is known as Sweet Briar Glen, Fairmount Park, Philadelphia; that the mode of propagation described, is the universal habit of the plant, the writer is not prepared to assert.

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THE MODE OF EXTRICATION OF THE AMERICAN SILK-WORM MOTH.

BY D. C. MCLAREN.

SHORTLY after reading Dr. Packard's article in the June number of the "NATURALIST," it was the writer's good fortune to observe the entire process of extrication in the case of a large and fine male specimen of *Telea Polyphemus*.

My attention was attracted by a rustling in my box of cocoons. The noise was traced to a cocoon which had been nearly flattened out during its previous sojourn in my coat-tail pocket, and whose development was, therefore, a surprise. I carefully cut an opening about a half an inch long, and a quarter wide on the top of the cocoon. The same method, I afterwards found, was employed by Mr. Trouvelot. I did not cut the flap entirely off, but left it so that the cocoon could be opened and closed at pleasure. All the motions of the chrysalis could be distinctly seen and studied. The back of the pupa had just begun to split. The positions of the "cocoon-cutters" were plainly marked by a pair of black protuberances on the shoulders. The end of the cocoon was *well moistened*.

The first motion was up and down. The chrysalis resting on its head and tail, arched its body so that the middle of the abdomen was thrust upwards. The object of this seemed to me to be the loosening of the moth from the pupa skin. This motion lasted about an hour, at the end of which the second motion began; this consisted of a rotatory movement. Now, for the first time, the head was pressed against the end of the cocoon. The gloss was rubbed off of the moistened portion, and the strands of silk much loosened by this boring process. Both these motions were accompanied by a slight rustling, largely due, I think, to the crackling of the cast-off larva skin.

All the preparations for exit having thus been made, the remaining steps were quickly taken. The body of the moth came to rest, its wings were drawn up from their cases by a shrugging of the shoulders, if I may use the expression, which describes the motion exactly. The shoulders were then drawn together as nearly as possible, and, while pressing against the cocoon, thrust apart with considerable violence. A tearing sound was now heard, entirely different from any which had preceded it. The cocoon-cutters, though not visible from my "coign of vantage," could be distinctly felt through the wet cocoon. Turning a little, the operation was repeated. After several repetitions, a weak spot was found, where the cutters were forced through. The small opening was quickly enlarged, the back of the thorax and the shoulders were thrust through, followed by the head, antennæ and fore-legs, in the order named. The remainder of the task was readily accomplished, and the perfect insect emerged two hours from the beginning of my observations.

I am by no means positive that the silk was actually broken by the cutters. It may have only been pushed aside. Without the aid of these little instruments, however, it is difficult to see how our moth could have forced its way through the prison walls of its own construction. It was a noticeable fact that the legs took no part in the process of extrication, but remained folded inactive on the breast. The cocoon-cutters might easily have escaped the notice of one not expecting their appearance, or, if seen, they might readily be mistaken for legs, by one who did not know of their existence.

The moth was much longer than usual in developing its wings, so that the period assigned for this extrication may be above the average.

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MOQUI FOOD-PREPARATIONS.

BY EDWIN A. BARBER.

THE *pee-kee* (*piki*) or Moqui bread is a thin tissuey substance of a greenish-blue color; the sheets measure about two feet by a foot and a half, and are usually folded twice, at right angles. The successive bundles or horizontal layers resemble, more than anything else, piles of blue silk of a coarse texture. This *piki* is brittle and very palatable, but a great quantity is required to satisfy one's hunger.

The flour or meal, of which the *piki* is made, is usually ground by the women. The mills consist, in almost every instance, of three stone boxes, probably a foot and a half square, and about eight inches in depth. In each compartment is a smooth stone, fitting the bottom, but inclined from the back to the front. Behind each of these mills (*metates*) a woman, by means of a long grinding stone, rubs the grain which is placed on the *metate*. The grinders are usually a foot in length, four or five inches in width and an inch or two in thickness. The corn flour, or "*ngum-ni*," as it is called, is of two qualities; the *pink* or *bluish*, and the *white*. The corn raised by these people scarcely grows to the height of two feet and the ears are short and small, the grains being either white, or red and blue, somewhat resembling that which we call here Mexican or pop-corn. The white corn is converted into a white flour, which compares favorably with our finest brands of corn meal; the red and blue corn is ground into a coarser powder, of a pinkish tint, for ordinary use. From this